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EXAMINER

JORGENSEN, LELAND R

ART UNIT	PAPER NUMBER
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2675

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/825,107

Applicant(s)

CRAWFORD, PETER JAMES

Examiner

Leland R. Jorgensen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 4, 6 - 20, and 23 - 28 is/are pending in the application.
- 4a) Of the above claim(s) 5, 21, and 22 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 - 28 is/are allowed.
- 6) ☒ Claim(s) 1 - 4, 6 - 8, 12, 14 - 20, and 23 - 25 is/are rejected.
- 7) ☒ Claim(s) 9 - 11, and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. In light of the Amendment and Response to Office Action filed March 14, 2003, the rejection of claims 3 – 19 under 35 U.S.C. 112, first paragraph, and the rejection of claim 2 under 35 U.S.C. 112, second paragraph, is withdrawn.

2. Claims 1, 2, 17 – 19, and 23 – 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant attempts to describe the invention as an apparatus but does not describe elements. Instead, applicant describes the position of the user's hand while using the elements. Thus, the claims describe an apparatus is described by what it does rather than what it is and thus provide no basis for one in the art as to what exactly is claimed.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claim 1 (amended) is rejected under 35 U.S.C. 102(b) as being anticipated by Hamling, USPN 5,648,798.

Claim 1

Hamlin teaches an input device for receiving an x-y input and input from at least one input actuator [buttons 204] on the input device wherein the device is adapted to allow a user to use the device while holding the device in the user's hand with the hand in an open-grip posture with the thumb pointing forward at the top. Hamlin, col. 1, line 66 – col. 2, line 11; col. 3, lines

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37 – 61; and figures 2 and 3. Hamlin teaches that the device functions as a mouse or trackball. Thus, it is inherent that the input device receives x-y input. The amendment adds that the thumb is generally collinear to a forearm on the same arm containing the user's thumb such that thumb tip can be placed in contact with an x-y actuator such that movement of the thumb tip provides x-y input while the interphalangeal joint of the thumb remains near its neutral, predominantly straightened position without undesirable flexural motion of the thumb. It is inherent that the user could hold such device in this position.

5. Claims 3 (amended), 6 (amended), 12 (amended), 14, and 17 (amended) are rejected under 35 U.S.C. 102(b) as being anticipated by Leiper, USPN 6,184,862 B1.

Claim 3

Leiber teaches an input device adapted for use by a seated user for receiving an x-y input and input from at least one input actuator [switch 44 and buttons 46 and 48] on the input device. The input device comprises a housing adapted for use independent of any solid surface beyond the user's hand. Leiber, col. 2, lines 36 – 42; col. 5, lines 7 – 10; and figure 1. The housing comprises a main body section [controller 20 with pistol grip or controller 120] with a long axis substantially parallel to a line in the body of a user grasping the pointing device running through the forearm of the user to the tip of the user's extended thumb. Leiber, col. 4, line 66 – col. 5, line 6; and figures 1 and 2.

Leiber teaches that the housing further comprises a platform [control end 26] for containment of an input device [pressure switch 44 and buttons 46 and 48]. Leiper, col. 5, lines 12 – 19; and figure 1. As shown in figure 1, the platform is placed to be protruding outward from and substantially perpendicular to and slightly skewed to one side of the long axis of the

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main body section. Although Leiper describes the input devices as pressure switch 44 and buttons 46 and 48 rather than an x-y input device, Leiber teaches,

It is to be appreciated that other switch elements may be substituted for the preferred switch embodiments described above in connection with the controller 20. For example, in an alternative embodiment, the functions of pressure switch 44 and left and right toss buttons 46 and 48 described below may be implemented in a joystick type control that is movable from front to back and left to right, or by a four way rocker switch, or a thumbwheel, or a tiny trackball, or a sensitive touchpad, or set of directional arrow keys located in the controller 20. Such variations are all within the scope of the invention.

Leiper, col. 5, lines 42 – 52. It is inherent that a tiny trackball or joystick type control be an x-y input device.

Leiper teaches that the housing has a channel for placement of the user's index finger and a channel for placement of the user's middle finger. The channels are positioned to place the user's index and middle fingers below and substantially orthogonal to the orientation of the user's thumb while the user is grasping the device. Leiper, figure 1. An input actuator [trigger switch 42] is integrally formed into a recessed portion of at least one of the channels. Leiper, col. 5, lines 19 – 24.

It is inherent that a x-y input sensor placed at the end of the input device, distal to the user's wrist, as taught by Leiper could receive input caused by movements of the thumb primarily comprised of circumduction of the thumb's basal joint.

Claim 4

Leiper teaches that the x-y input is provided by the user's thumb. Leiper, col. 5, lines 19 - 24.

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Claim 6

Leiper teaches that the input from the user's thumb is provided to a touchpad. Leiper, col. 5, lines 42 – 52. A touch pad is a zero force touch switch.

Claim 12

Leiper teaches that the input from the user's thumb is provided to a touchpad. Leiper, col. 5, lines 42 – 52.

Claim 14

Leiber teaches that that the x-y input from the user's thumb is provided to a trackball. Leiper, col. 5, lines 42 – 52. A touch pad is a zero force touch switch.

Claim 17

Leiper teaches an input device for a computer comprising touch pad sensor positioned related to the locations on the housing intended for the user's thumb and fingers such that the user provides input to the touch pad with the thumb. It is inherent that a touch pad receives x-y input. Leiper, col. 5, lines 42 – 52; and figure 1. Applicant amended claim 17 to add that the movement is input by movement of the substantially straightened thumb without substantial flexing of the most distal joint in the user's thumb. It is inherent that the user could use the device with such movement of the thumb.

6. Claims 20 (amended) is rejected under 35 U.S.C. 102(b) as being anticipated by Michalski, USPN 4,497,982.

Claim 20

Michalski teaches a zero force touch switch comprising a conductive capacitive sensing plate [sensor contacts 4] located in the bottom of a channel [finger guides 2] contoured to receive

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a user's finger. The sensor contacts 4 may be capacitive contacts. Michalski, col. 1, line 65 – col. 2, line 15; and figures 1 and 2.

Claim Rejections - 35 USC § 103

7. Claim 2 (amended) is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamling in view of Gasca, USPN Des. 381,970.

Claim 2

Hamling teaches the input sensor [track ball 206] to receive input from the user's thumb. Hamling, col. 3, lines 54 – 61; and figure 3. Hamling also teaches a support pad 110 upon which the user may rest his hand. Hamling, col. 3, lines 16 – 18; and figure 2. “Thus, with the side of a user's hand, for example a right handed user as shown in FIG. 2, resting in the neutral position on support pad 110, the shape and positioning of upper housing 200 comfortably aligns the fingers of the hand with the three buttons 204.” Hamling, col. 3, lines 37 – 41. This causes the thumb to rest comfortably on the track ball 206. Hamlin col. 3, lines 56 – 58. “Support pad 110 is thus shaped to hold the side of the user's hand to couple movement of the hand with movement of the entire invention.” Hamling, col. 4, lines 17 – 20.

Hamling, however, does not specifically teach a positioning means. Claim 2 (amended) substitutive the term positioning means for fin but it appears that use of the term positioning means is meant to include the term fin.

Gasca teaches a fin. Claim 2 (amended) substitutive the term positioning means for fin but it appears that use of the term positioning means is meant to include the term fin. The fin appears to be adapted to interact with the length of a user's thumb such that a user with a large hand and long thumb grasps a first segment of the palm fin and a user with a small hand and

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short thumb grasps a second segment of the palm fin wherein the height of the palm fin at the midpoint of the second segment is less than the height of the palm fin at the midpoint of the first segment. Gasca, figures 1 and 2.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the fin as shown by Gasca with the input device as taught by Hamling to produce an input device to give additional support to the hand.

8. Claims 7, 18 (amended), 19 (amended), 24 (new), and 25 (new) are rejected under 35 U.S.C. 103(a) as being unpatentable over Leiper in view of Plesko, USPN 6,057,554.

Claim 7

Claim 7 adds that the zero force touch switch detects contact of the user's finger. Leiper teaches that the input from the user's thumb is provided to a touchpad. Leiper, col. 5, lines 42 – 52. A touch pad is a zero force touch switch.

Leiper does not specifically teach such a switch for a finger.

Plesko teaches a zero force switch that can be used by a finger. Plesko, col. 7, lines 3 – 37. “No force or pressure need be applied by digit 70 to effect on/off actuation of reflective switch element 57.” Plesko, col. 7, lines 7 – 9.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the zero force switch as taught by Plesko with the input device taught by Leiper. Plesko invites such combination by teaching,

Several important features of the present invention should now be pointed out.

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Use of the reflective switch described herein permits the housing of a scan system to be substantially sealed against contamination since no mechanical coupling is needed between the housing and the inside of the scan system.

The need to push or squeeze fatigue producing spring loaded switches as are common on prior art scanners is eliminated by the present invention. Furthermore, miss registration of the scan beam with respect to a target due to the application of force or impact from mechanical switching is eliminated in low mass scan equipment.

In low mass portable and especially in hand holdable housings such as wand style housings, card housings, pocket calculator size housings or finger mounted housings, the pressing or pushing of mechanical switches is replaced by more ergonomic methods. Only a simple slipping forward of an index finger, or sliding motion of a thumb or other digit is required by various embodiments of the present invention and has been found to be much easier and more efficient than actuating the mechanical detent type switches or triggers found in prior art scanners.

Assembly of the reflective object switch or acoustic switches described herein is easier and less expensive than assembly of bulky prior art trigger mechanisms which require numerous special parts including springs, levers, pivot mounting features, openings in the housing, mechanical switches, stops to prevent over travel or damage to the mechanical switch and the like. The non-mechanical switch of the present invention is simply soldered to the circuit board--preferably automatically machine populated and soldered. The whole scanner assembly is then simply closed or sealed in a housing.

Plesko, col. 3, line 48 – col. 4, line 13.

Claims 18 and 19

Leiper teaches a scroll select touch switch [pressure switch 44] positioned to be actuated by a movement of the thumb. Leiper teaches a trigger switch 42 positioned at the bottom of a channel intended to receive and support the index finger of the user such that the movement of the index finger tip of a supported channeled index finger actuates the trigger switch. Leiper, figure 2. Control circuitry interprets the input from the scroll select touch switch and the zero force touch switch in the index finger channel wherein the circuitry interprets the activation of the zero force touch switch after the onset of a maintained activation of the scroll select touch

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switch as a request for continued scrolling of a displayed image on the computer's image display.

Leiper, col. 8, line 67 – col. 9, line 11.

Leiper does not teach that the trigger switch is a zero force touch switch.

Plesko teaches a zero force switch. Plesko, col. 7, lines 3 – 37. “No force or pressure need be applied by digit 70 to effect on/off actuation of reflective switch element 57.” Plesko, col. 7, lines 7 – 9.

For the reasons given in the discussion about claim 7 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the zero force switch as taught by Plesko with the input device taught by Leiper.

Claims 24 and 25

Leiper teaches that the input from the user's thumb is provided to a touchpad. Leiper, col. 5, lines 42 – 52. A touch pad is a zero force touch switch.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leiper in view of Nakazawa et al., USPN 6,492,633 B2.

Claim 8

Claim 8 adds that the zero force touch switch detects the interruption of a beam of light. Leiper teaches that the input from the user's thumb is provided to a touchpad. Leiper, col. 5, lines 42 – 52. A touch pad is a zero force touch switch.

Leiper does not specifically teach that the zero force touch switch detects the interruption of a beam of light.

Nakazawa teaches a touch pad that detects the interruption of a beam of light. Nakazawa, col. 5, lines 22 – 49; and figure 1.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the optical touch pad as taught by Nakazawa with the input device taught by Leiper.

Nakazawa invites such combination by teaching,

A main object of the present invention is to provide an optical scanning-type touch panel, capable of accurately measuring a scanning light cut-off region and thereby calculating the correct position or size of an indicator, by switching a threshold value with respect to an output of a light receiving element for judging whether a region is a cut-off region, in a plurality of stages according to the scanning angle.

Nakazawa, col. 2, lines 36 – 44. Nakazawa concludes,

As described above, in the optical scanning-type touch panel of the present invention, since the threshold value used as a criterion in judging whether a cut-off region is formed by the indicator is varied according to the scanning angle, it is possible to eliminate the effect of the directly incident light on the light receiving elements and calculate the accurate cut-off region, and thereby providing highly accurate calculation results for the position and size of the indicator.

Nakazawa, col. 12, lines 34 – 42.

10. Claim 15 (amended) and 16 (amended) are rejected under 35 U.S.C. 103(a) as being unpatentable over Leiper in view of Logan et al., USPN 5,327,161.

Claim 15

Leiper does not teach that the device senses the thumb at a perimeter input position and communicates to software the user's request for x-y movement of the object image under software control until the user's thumb ceases to be detected at the perimeter position.

Logan teaches sensing a finger or thumb at a perimeter input position and communicating to software the user's request for x-y movement of the object image under software control until the user's thumb ceases to be detected at the perimeter position. Logan, figures 3A and 3B.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the perimeter input position detector as taught by Logan with the input device as taught by Hamling, Leiper, and Adams. Logan invites such combination by teaching,

It is therefore an object of this invention to provide a system and method for emulating a mouse input device with a touchpad input device in which the cursor may be moved long distances with a single stroke.

It is a further object of this invention to provide such a system and method in which the cursor may be dragged long distances without holding the drag button down.

It is a further object of this invention to provide such a system and method in which the cursor may be dragged without maintaining finger contact with the touchpad device.

This invention results from the realization that relative positioning touchpad devices can be dramatically improved to allow long distance cursor movement in or out of drag mode by maintaining the cursor movement in the same relative direction as a touchpad stroke after the stroke is terminated.

This invention features a system and method for emulating a mouse input device with a touchpad input device in which the cursor movement continues after completion of a touchpad swipe whether in or out of the drag mode, to allow the cursor to be exactly and quickly positioned.

Logan, col. 1, line 65 – col. 2, line 21.

Claim 16

Logan, in figure 6, shows that the x-y input from the user's thumb is provided to a touchpad and the perimeter input positions of the touchpad are actuated by pressing tactile cursor movement buttons adjacent to the touchpad.

11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamling in view of Leiper.

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Claim 23

Hamling does not teach the channels in the device housing.

Leiper teaches a device housing consisting of a grip-like main body section [controller 20] that is elongated with a curved lower surface that is contoured and partially channeled to accommodate a set of fingers including an index finger from the hand containing the user's thumb while the fingers are in a curved position and wherein the x-y actuator is located at the distal end of the main body section in proximity to the index finger, and the x-y actuator is facing the user's wrist when the input device is held by the user to receive x-y input from the user's thumb tip. Leiper, col. 5, lines 7 – 10; and figure 1.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the channels as shown by Leiper with the input device as taught by Hamling. Leiper invites such combination by teaching, after explaining the need for its invention,

It is an object of the invention to provide such an apparatus that can be operated single handedly. It is an object of the invention to provide such a system which permits the diagnosing physician to move around in a work area to retrieve reference works, view past studies, or do other things while at the same time continuing with the medical study of the images.

Leiper, col. 2, lines 36 – 42. Although Leiper focus on an input device for physician, Leiper further teaches,

Although the foregoing description has described an application of a combined image review/voice dictation function in a controller 20 operating in conjunction with a medical interpretation unit, the present invention has broader application as well. It may be implemented for example in a legal or business environment.

Leiper, col. 13, lines 61 – 65. Leiper teaches pressure switch 44 and buttons 46 and 48 on the upper surface 29 of controller 20. Leiper, col. 5, lines 12 – 19. Leiper then specifically invites a combination with Hamling by teaching,

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It is to be appreciated that other switch elements may be substituted for the preferred switch embodiments described above in connection with the controller 20. For example, in an alternative embodiment, the functions of pressure switch 44 and left and right toss buttons 46 and 48 described below may be implemented in a joystick type control that is movable from front to back and left to right, or by a four way rocker switch, or a thumbwheel, or a tiny trackball, or a sensitive touchpad, or set of directional arrow keys located in the controller 20. Such variations are all within the scope of the invention.

Leiper, col. 5, lines 42 – 52.

Allowable Subject Matter

12. Claims 26 – 28 are allowed.

13. The following is an examiner's statement of reasons for allowance:

In the prior action, examiner noted that claims 9 - 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112 set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. In response, applicant added new claim 26 that substantially tracks prior claim 9. For the reasons given in the prior action, therefore, new claim 26 is allowable.

Claims 27 and 28 are allowable as dependant on claim 26.

14. Claims 9 – 11 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

As noted in the prior action, examiner stated that claims 9 - 11 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

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Claim 13 adds that the touchpad may be tilted through the use of at least one tilt adjustment screw. Examiner has found no prior art that teaches or suggests such limitation to the device described in claim 3, 4, and 12.

Response to Arguments

16. Applicant's arguments with respect to claims 1 – 8, 12, and 14 - 25 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that amended claims 1 and 17 are distinguishable from the prior art because the tip of the thumb provides the x-y input. The specifications define the term “tip of the thumb.”

A portion of the thumb, the thumb tip 124 is identified since the thumb tip will be used to provide input rather than the thumb pad 128. While the term fingertip is sometimes used to refer to any portion of the finger beyond the last digit joint, in this application, the term pad is used to refer to the surface opposite from the finger nail or thumb nail. The term tip is used to refer to the portion of the thumb or finger that is the distal surface of the finger or thumb which is located to distal and above the corresponding pad and just below the corresponding nail such as thumb nail 132. While there is not a clear line of demarcation between the thumb pad 128 and the thumb tip 124, the distinction is useful for describing the interaction between the thumb 104 and the present invention.

Specification, page 17, lines 3 – 12. Still, this provides little guidance on what is or is not the limitation. Almost all the touch panels and trackballs cites in this and the prior office actions can be operated by the tip of the thumb. Thus, the rejected claims are not distinguishable over the prior art.

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Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bryant, Sr., USPN 4,831,736, teaches a carriage for supporting a mouse having an adjustable screw.

Purnell, USPN 5,011,149, teaches an adjustable screw for a joystick.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on 703-305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, telephone number (703) 306-0377.

lrj



STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600